

**REMARKS**

In the Office Action, claims 1-39 were rejected. By the present response, claims 35-39 are amended. Upon entry of the amendments, claims 1-39 will remain pending in the application. Reconsideration and allowance of the claims are requested.

**Rejections Under 35 U.S.C. § 101**

In the Office Action, the Examiner rejected claims 35-39 for being directed to non-statutory subject matter on the grounds that the claims are for a computer program rather than a program installed on a computer-readable medium. *See* Office Action, page 3. The Examiner suggested a claim such as “A computer-readable medium embodied with a computer program for analyzing data comprising...” *Id.* The claims have been amended to adopt the phraseology suggested by the Examiner. Accordingly, Applicants request withdrawal of the rejections.

**Rejections Under 35 U.S.C. § 102**

In the Office Action, the Examiner rejected claims 9-13, 15-24, 26-29, 31-34, and 36-39 under 35 U.S.C. 102(b) as being anticipated by Taguchi, U.S. Patent No. 5,807,256 (hereinafter “Taguchi”). Of these, claims 9, 24, 28, 33-34, and 38-39 are independent. All of these claims are believed to be clearly patentable for at least the reasons summarized below.

***Claim 9***

Applicants respectfully assert that several features of independent claim 9 are not disclosed by the Taguchi reference. For example, independent claim 9 recites “*generating a temporal change image based upon the first and second images*” (emphasis added).

Taguchi merely refers to a *temporal change data table*. Taguchi, col. 64, lines 63-64. The Taguchi temporal change data table stores quantitative data regarding

abnormalities, as depicted in Fig. 50 of Taguchi. *Id.* at col. 56, lines 21-29. Taguchi, however, *does not generate a temporal change image*, as recited in the rejected claim. Furthermore, the Examiner acknowledged that Taguchi does not create a temporal change image in the §103 discussion (see below). Office Action, page 4. The Taguchi reference is lacking a claim element (generating a temporal change image), and therefore cannot anticipate claim 9 under §102.

Independent claim 9 also recites a method comprising “analyzing a first image via at least one CAD algorithm to identify a feature of interest; and *if a feature of interest is identified in the first image, accessing a second image...*” (emphasis added). Thus independent claim 9 uses the results of the CAD analysis on a first image as a triggering mechanism to initiate the search for and analysis of a second image. Taguchi, in contrast, recites the use of two CAD algorithms on a single image. Furthermore, Taguchi does not recite the use of first-analysis results to trigger a second analysis.

The Examiner cited Taguchi at col. 81, lines 25-41, which describe the use of more than one CAD algorithm. The algorithms, however, are used on “each sheet of the images.” Taguchi, col. 81, lines 25-41. The application of multiple algorithms to each image may detect and confirm abnormalities in one image, but it is very different from the method of claim 9. Similarly, the Examiner cited Taguchi at col. 81, lines 50-62 as an example of accessing a second image. Office Action, page 8. This paragraph refers to detecting an anomaly in a first image, creating a second image which is a “minified” version of the first image combined with an arrow pointing to the anomaly, and then superimposing the second image on the first image. See Taguchi, col. 6, lines 50-62, col. 17, lines 11-27, Fig. 4-9. However, here again, such processing is not equivalent to accessing a second image if a feature of interest is identified in a first image. Taguchi, therefore does not anticipate claim 9.

***Claim 24***

As stated above, the Examiner rejected independent claim 24 as unpatentable over Taguchi. Applicants respectfully assert that several features of claim 24 are not present in Taguchi. For example, claim 24 recites “interactively analyzing the first and second images based upon the comparison,” which is not disclosed in the Taguchi reference.

Taguchi recites using “two detecting algorithms” on “each sheet of images” and then entering the results in a database to show whether both results are normal, one normal and one abnormal, or both abnormal. Taguchi, col. 81, lines 25-41, col. 82, lines 16-21. If the results are different, then the results are taken to the patient and a “close examination” is recommended. *Id.* at col. 83, lines 27-30. This methodology is not equivalent to interactively analyzing the two images, as claimed, based upon a comparison. Thus, Taguchi does not recite interactively analyzing *the first and second images* and therefore does not anticipate claim 24.

***Claim 28***

The Examiner also rejected claim 28 as unpatentable over Taguchi. Applicants respectfully traverse this rejection. Claim 28, *inter alia*, recites analyzing a first image and “*if a feature of interest is identified in the first image, accessing a second image from a different time than the first image and analyzing the first and second images*” (emphasis added).

As discussed above in connection with claim 9, Taguchi recites the use of two CAD algorithms on a single image. Taguchi does not recite using the first image as a triggering mechanism to seek and analyze second image in a database.

***Claim 31***

The Examiner also rejected claim 31 as unpatentable over Taguchi. Claim 31, *inter alia*, recies “accessing a second image from a different time than the first image *if a*

feature of interest is identified in the first image...” (emphasis added). As discussed above regarding claim 28, Taguchi does not include a triggering mechanism to prompt the system to seek and analyze a second image. Therefore Taguchi lacks at least this element of claim 31.

Claim 31 also recites, *inter alia*, “generating a temporal change image based upon the first and second images.” As discussed regarding claim 9, above, Taguchi does not *generate a temporal change image*. Thus, Taguchi is also lacking at least this second element of claim 31 and therefore does not anticipate claim 31.

#### ***Claim 32***

The Examiner furthermore rejected claim 32 as unpatentable over Taguchi. Claim 32 recites a “means for generating a temporal change image...” As discussed above regarding claim 9, Taguchi does not generate a temporal change image and thus does not anticipate claim 32.

#### ***Claim 33***

The Examiner also rejected claim 33 as unpatentable over Taguchi. Claim 33 recites, *inter alia*, comparing the analysis results from a first and second image, and a “means for *interactively analyzing the first and second images* based upon the comparison” (emphasis added). As discussed in connection with claim 24, above, Taguchi does not recite an interactive analysis of the images and thus does not anticipate claim 33.

#### ***Claim 34***

The Examiner also rejected claim 34 as unpatentable over Taguchi. Claim 34 recites, *inter alia*, analyzing a first image and a “means for accessing a second image from a different time than the first image *if a feature of interest is identified in the first image...*” (emphasis added). As discussed with regard to claim 28, Taguchi does not

recite a triggering mechanism to prompt the system to access a second image if a feature of interest is identified in a first image.

***Claim 36***

Claim 36 recites a computer-readable medium with a program that, *inter alia*, accesses a second image if a feature of interest is identified in a first image and generating a temporal change image based upon the first and second images. As discussed above, Taguchi does not use the analysis of a first image to trigger the analysis of a second image, nor does Taguchi generate a temporal change image. Thus Taguchi does not anticipate claim 36.

***Claim 37***

Claim 37 recites a computer-readable medium with a program that, *inter alia*, generates a temporal change image. As discussed above, Taguchi does not generate a temporal change image, and thus does not anticipate claim 37.

***Claim 38***

Claim 38 recites a computer-readable medium with a program that, *inter alia*, compares the results of CAD analysis on two different images, and then “interactively analyz[es] the first and second images based upon the comparison.” As discussed with reference to claim 24 above, Taguchi does not teach the interactive analysis based on the results of the comparison, and thus does not anticipate claim 38.

***Claim 39***

Claim 39 recites a computer-readable medium with a program that, *inter alia*, analyzes a first image via a CAD algorithm and then accesses and analyzes a second image if a feature of interest was found in the first image. As discussed under claim 28, above, Taguchi does not recite the use of a first image to trigger the analysis of a second image. Thus, Taguchi does not anticipate claim 39.

**Rejections Under 35 U.S.C. § 103**

The Examiner rejected claims 1-8, 14, 25, 30, and 35 under 35 U.S.C. 103(a) as being unpatentable over Taguchi, in view of Kao, U.S. Patent No. 5,361,763 (hereinafter "Kao"). Office Action, page 4. Of these, claims 1, 30, and 35 are independent.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

The Examiner rejected independent claims 1, 30, and 35 on the assumptions that Taguchi discloses the analysis of a temporal change image, and that Kao teaches the creation of a temporal change image. Applicants respectfully traverse this rejection.

***Claim 1***

As stated above, the Examiner rejected independent claim 1 as unpatentable over the Taguchi reference in combination with the Kao reference. Applicants respectfully traverse this rejection. Independent claim 1 recites a method comprising, *inter alia*, “*generating a temporal change ... and analyzing the temporal change image via at least one CAD algorithm*” (emphasis added).

The Examiner relied upon Taguchi for teaching a method to analyze a temporal change image via at least one CAD algorithm. Office Action, page 4. The Examiner, however, recognized that Taguchi fails to teach the generation of a temporal change image based upon first and second images from different times by segmenting the first and second images from different times by segmenting the images and registering the segmented images with one another, and therefore relied upon Kao for such teachings.

**Neither reference teaches the creation of a temporal change image.**

Applicants respectfully assert that Taguchi and Kao, taken alone or in combination, do not teach or suggest the generation of a temporal change image. The Examiner stated that Taguchi is silent about the creation of a temporal change image. Office Action, page 4. As discussed below, like Taguchi, Kao does not teach the creation of a temporal change image.

Kao teaches how to register two or more images, where the images are of the same subject but with different levels of contrast, and then using the images to quantify image data. Similarly, Kao teaches the measurement of “fractional data” from a first image, measuring fractional data from a second image, and then using the data to calculate a physical parameter of the data. Kao, col. 2, lines 36-43. This use of data from multiple images is not the same as creating a temporal change image.

Kao goes on to teach a method of combining multiple NMR scans in which each “slice” of the subject is scanned multiple times to produce multiple views of each slice. Kao, col. 6, lines 49-63. However, while Kao creates multiple views of the same subject, it does not create a temporal change image.

Kao goes on to discuss making two revolutions with a CT scanner gantry to acquire image data of the same slice of the subject at a different time. Kao, col. 13, lines 54-61. Kao states that the additional revolution is done “in order to observe temporal changes, such as occur in the heart at different stages of the cardiac cycle.” *Id.* at lines 56-58. While this reference describes the observation of temporal changes, nowhere does it suggest creation of *a* temporal change image.

Finally, Kao describes using a pair images to analyze volume of a given tissue type. The two images can originate from a CT scanner before and after injecting dye into the patient or from two different scanner types, provided that the images can be registered to each other. *Id.* at col. 14, lines 11-34. The images show the same tissue, but with different levels of contrast, and thus a computer can analyze them to calculate the volume of a feature. *Id.* Even though these images are taken at different times, Kao still falls short of the creation of a temporal change image. One skilled in the art would as well conclude that volumes are determined by pixel or voxel counts, in a conventional manner. At the very least, however, the reference simply does not support the Examiner’s supposition regarding creation of a temporal change image.

**Neither reference teaches the analysis of a temporal change image.**

The Examiner did not argue that Kao teaches analysis of a temporal change image. Applicants confirm finding no such teaching in Kao.



Taguchi does not teach the use of a CAD algorithm to analyze a temporal change image. Taguchi does refer to storing analytical data in a database. Taguchi, col. 48, line 28; col. 48, line 49; col. 50, line 39. Taguchi also recites quantitative comparison of abnormality location coordinates between two images, recognition of changes in quantitative data, and creation of an abnormality data table. *Id.* at col. 56, lines 22-29.

The Examiner asserted that Taguchi discloses “analyzing the temporal change image.” Office Action, page 4. This paragraph of Taguchi states that a doctor “displays the diagnosis information obtained by the CAD processing, such as the abnormality data table, the temporal change data table of the abnormality, or the like, operate in the above mentioned manner.” Taguchi, col. 64, lines 60-65. The “above mentioned manner” refers to a text character display unit known as the “WS-CDISP.” *Id.* at col. 63, lines 51-53. The temporal change data table refers to the quantitative temporal change data. Thus, the doctor is able to read a diagnosis on a character display, which is *not* the same as analyzing a temporal change image.

While Taguchi does describe using quantitative analysis of original images, Taguchi does not describe using CAD algorithms to analyze a temporal change image.

In summary, because neither reference teaches or suggests generating a temporal change image or analyzing such an image, their combination cannot support a *prima facie* case of obviousness of claim 1.

### ***Claim 30***

Claim 30 essentially recites a system that performs the method recited in claim 1. Accordingly, claim 30 is allowable for the same reasons as summarized above regarding claim 1.

***Claim 35***

Claim 35 recites a computer program for generating a temporal change image, and analyzing the temporal change image. For the reasons discussed above with respect to claim 1, Taguchi and Kao do not teach the creation or analysis of a temporal change image. Thus, claim 35 is not obvious in light of Taguchi and Kao.

**Conclusion**

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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PS  
Patrick S. Yoder  
Reg. No. 37,479  
FLETCHER YODER  
P.O. Box 692289  
Houston, TX 77269-2289  
(281) 970-4545